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# The roughness of Ireland's rock platforms.

Mary Bourke, Ciaran Nash, Niamh Cullen, and Ankit Verma
Geography, Trinity College Dublin, Geography, Dublin, Ireland (bourkem4@tcd.ie)

Shore platforms are erosional landforms located on rock coastlines. The system behaviour of platforms is complex because, at any given location, interactions between geological controls, geomorphic processes and climatological drivers are variable. Thus, it is reasonable to expect that the surface expression of these interactions leads to a myriad of morphometries.

Given predicted changes in future wave climate, there is an urgent need to understand the role of shore platforms in natural coastal protection. Shore platforms may reduce rates of coastal retreat by attenuating wave energy. However, their attenuation efficacy will vary according to several criteria, one of which is surface roughness. It is therefore prudent to consider platform surface morphometry as a parameter controlling the heterogeneous distribution of wave energy.

The geology of Ireland's rock coasts strongly influences the morphology of its platforms. We find that existing classifications do not sufficiently capture the range of complex surface morphologies. We therefore propose a new classification for platforms along the Irish seaboard. We approach this at two relevant scales. The first is at the platform-scale and is analogous to existing platform classifications based on spatial extent. The second is at a sub-platform scale; this extends the existing classification schema to include geomorphological features that occur on the platform surface (e.g., channels, pans, pits and pools).

We report on field studies undertaken to quantify the roughness of these platform types. We use a combination of Unmanned Aerial Vehicle image data and Structure from Motion algorithms to build high-resolution digital elevation models of platform surfaces. We use these data to estimate and compare aerial surface roughness parameters at relevant length scales for platforms.